

January 28, 1836.

RODERICK IMPEY MURCHISON, Esq., V.P., in the Chair.

William Clark, M.D.; and Francis Marcet, Esq., were elected Fellows of the Society.

A paper was read, entitled, "Discussion of Tide Observations made at Liverpool." By J. W. Lubbock, Esq., F.R.S.

The chief purpose which the author has in view in presenting the tables accompanying this paper, which are a continuation of those published in the Philosophical Transactions for 1835, and are founded on the observations instituted by Mr. Hutchinson at Liverpool, is to exhibit the diurnal inequality in the height of high water, which is scarcely sensible in the river Thames, but which at Liverpool amounts to more than a foot. The diurnal inequality in the interval appears to be insensible.

The author has farther ascertained that Bernouilli's formulæ expressing the height of the tide, deduced from his theory of the tides, present a very remarkable accordance with observation.

February 4, 1836.

SIR JOHN RENNIE, Knt., Vice-President, in the Chair.

George William Drory, Esq.; Robert Edmund Grant, M.D.; and John Dillwyn Llewelyn, Esq.; were elected Fellows of the Society.

"Geometrical investigations concerning the Phenomena of Terrestrial Magnetism: Second Series,—On the number of points at which a magnetic needle can take a position vertical to the Earth's surface." By Thomas Stephens Davies, Esq., F.R.S. Lond. and Edin., F.R.A.S., of the Royal Military Academy, Woolwich.

This paper is intended as a continuation of the one by the same author published in the last volume of the Philosophical Transactions; in which it was proposed to investigate the mathematical consequences of the hypothesis of the earth being a magnet with two poles, or centres of force, situated anywhere either within, or at the surface, and of equal intensity, but of contrary characters: with the ultimate view of verifying this hypothesis by comparing its results, so deduced, with the phenomena furnished by observation.

In his former paper the author had shown that on this hypothesis the magnetic equator, or the locus of the points at which the magnetic needle takes a horizontal position, is one single and continuous line on the surface of the earth. In this paper his object is to prove that there are always two, and never more than two, points at the earth's surface, at which the needle takes a position vertical to the horizon.

At the close of his former paper the author had deduced the equation of the curve of verticity, that is, of the curve at any point